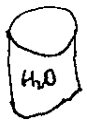
What is claimed is:



1. An improved safer, compact, mobile, and efficient mixed hydrogen-oxygen fuel generator system comprising:

a. at least one electrolytic cell comprised of an electrolytic solution for the production of both hydrogen gas and oxygen gas and of components comprising at least one bipolar electrode plate connected to a suitable power source;

b. a water storage tank comprised of a hydrogen and oxygen gas collection upper chamber, a means to remove moisture from said gas, a means to cool fluids contained in said storage tank, a means to circulate said fluids contained in said storage tank as needed, and a lower chamber filled with said electrolytic solution to a level adequate for the effective functioning of said system;

c. at least one means to monitor and control operational conditions; therm?

d. a cooling system comprised of:

i. a source of ice water;

ii. a circulation conduit for said electrolytic solution;

iii. a water cooling tank for the cooling of said electrolytic solution, circulating in said circulation conduit, with said ice water;

iv. a liquid coolant conduit for the flow of a liquid coolant through said generator system; and

v. at least one pump for pumping said electrolytic solution through said circulation conduit and for pumping said liquid coolant through said liquid coolant conduit;

e. a means to adjust, as needed, the ignition flame temperature of said hydrogen-oxygen fuel produced in said at least one electrolytic cell; and

f. a means to transfer said hydrogen-oxygen fuel to a combustion site.

2. A system as described in claim 1 wherein said gas collection upper chamber further comprises an inside to which are secured at least two layers of drip plates at angles adequate to cause rising gases to rise in a zig-zag fashion.

3. A system as described in claim 2 wherein said at least two layers of drip plates cause the precipitation of water vapor out of said rising gases.

4. A system as described in claim 1 wherein said means to adjust ignition flame temperature comprises passing said hydrogen-oxygen fuel through a temperature-lowering fluid prior to said transfer of said hydrogen-oxygen fuel to said combustion site.

5. A system as described in claim 4 wherein said temperature-lowering fluid is selected from the family of liquefied ethane and ethane derivatives.

6. A system as described in claim 1 wherein said at least one means to monitor and control operational conditions is selected from the group consisting of pressure sensors and regulators, fluid level sensors and regulators, power controllers, backfire prevention devices, flashback prevention devices, explosion prevention devices, temperature sensors and regulators, and combinations thereof.

7. A system as described in claim 1 wherein said at least one means to monitor and control operational conditions consists of effectively located devices including at least one pressure sensor and regulator, at least one fluid level sensor and regulator, at least one power controller, at least one backfire prevention device, at least one explosion prevention device, and at least one temperature sensor and regulator.

8. A system as described in claim 1 wherein said at least one electrolytic cell further comprises at least one metal plate with two sides wherein each of said two sides is insulated by an insulating partition.

9. A system as described in claim 8 wherein said components of said at least one electrolytic cell are secured sequentially in place by at least two position locating rods that are placed lengthwise along said at least one electrolytic cell, and wherein each of said at least two locating rods is run through a series of corresponding locating holes placed in each of said components.

10. A system as described in claim 1 wherein said alkaline electrolytic solution is comprised of KOH and water.

11. A system as described in claim 10 wherein said alkaline electrolytic solution is comprised of KOH and water in a volumetric ratio of KOH: $H_2O = 2 : 20 \pm 0.05$.

12. A system as described in claim 9 wherein said at least one metal plate has at least one airflow hole and at least one water flow hole and wherein, when placed in said at least one electrolytic cell, said at least one airflow hole is located above said at least one water flow hole.

13. A system as described in claim 12 wherein said insulating partition is comprised of a protruding edge, said locating holes corresponding to said locating rods, and an oval shaped gas-water orifice and wherein, when placed in said at least one electrolytic cell, said gas-water orifice has an upper edge higher than said at least one air flow hole and a lower edge lower than said water flow hole so that both liquids and gases can flow lengthwise along said at least one electrolytic cell.

14. A system as described in claim 13 wherein said gas-water orifice has two gas-water orifice sides, each of said gas-water orifice sides sealed with a corresponding washer containing a means to prevent the escape of said electrolytic solution, said oxygen gas, and said hydrogen gas.

15. A system as described in claim 14 wherein said means to prevent the escape of said electrolytic solution, said oxygen gas, and said hydrogen gas is selected from the group consisting of a ring shaped sunken trap and an annular groove.

16. A system as described in claim 1 wherein said at least one electrolytic cell consists of two parallel electrolytic cells.

17. A system as described in claim 1 wherein said means to adjust ignition flame temperature comprises passing air through a temperature-lowering fluid and mixing said air passed through said temperature-lowering fluid with said hydrogen-oxygen fuel prior to said transfer of said hydrogen-oxygen fuel to said combustion site.

18. A system as described in claim 17 wherein said temperature-lowering fluid is selected from the family of liquefied ethane and ethane derivatives.

19. An improved safer, compact, mobile, and efficient mixed hydrogen-oxygen fuel generator system comprising:

a. at least one electrolytic cell comprised of components including at least one bipolar electrode plate connected to an appropriate power source and an alkaline electrolytic solution for the production of both hydrogen gas and oxygen gas;

b. a water storage tank comprised of a hydrogen and oxygen gas collection upper chamber, a means to remove moisture from said gas, a means to cool fluids contained in said storage tank, a means to circulate said fluids contained in said storage tank as needed, and a lower chamber filled with said electrolytic solution to a level adequate for the proper functioning of said system;

c. at least one means to monitor and control operational conditions;

d. a cooling system comprised of:

i. a source of liquid coolant;

ii. a circulation conduit for said electrolytic solution;

iii. a liquid cooling tank for the cooling, with said liquid coolant, of said electrolytic solution circulating in said circulation conduit;

iv. a liquid coolant conduit for the flow of said liquid coolant through said generator system; and

v. at least one pump for pumping said electrolytic solution through said circulation conduit and for pumping said liquid coolant through said liquid coolant conduit;

e. a means to adjust, as needed, the ignition flame temperature of said hydrogen-oxygen fuel produced in said at least one electrolytic cell; and

f. a means to transfer said hydrogen-oxygen fuel to a combustion site;

wherein said means to adjust ignition flame temperature is selected from the group of methods consisting of a first method comprised of passing air through a temperature-lowering fluid and mixing said air passed through said temperature-lowering fluid with said hydrogen-oxygen fuel prior to said transfer of said hydrogen-oxygen fuel to said combustion site and a second method comprised of passing said hydrogen-oxygen fuel through a temperature-lowering fluid prior to said transfer of said hydrogen-oxygen fuel to said combustion site.

20. An improved safer, compact, mobile, and efficient mixed hydrogen-oxygen fuel generator system comprising:

a. at least one electrolytic cell comprised of an alkaline electrolytic solution for the production of both hydrogen gas and oxygen gas and of components including at least one bipolar electrode plate connected to a power source;

b. a water storage tank comprised of a hydrogen and oxygen gas collection upper chamber, an inside of said upper chamber to which are secured at least two layers of drip plates

at angles adequate to cause rising gases to rise in a zig-zag fashion, a means to remove moisture from said gas, a means to cool fluids contained in said storage tank, a means to circulate said fluids contained in said storage tank as needed, and a lower chamber filled with said electrolytic solution to a level adequate for the effective functioning of said system;

c. at least one means to monitor and control operational conditions;

d. a cooling system comprised of:

i. a source of liquid coolant;

ii. a circulation conduit for said electrolytic solution;

iii. a liquid cooling tank for the cooling, with said liquid coolant, of said electrolytic solution circulating in said circulation conduit;

iv. a liquid coolant conduit for the flow of said liquid coolant through said generator system; and

v. at least one pump for pumping said electrolytic solution through said circulation conduit and for pumping said liquid coolant through said liquid coolant conduit;

e. a means to adjust, as needed, the ignition flame temperature of said hydrogen-oxygen fuel produced in said at least one electrolytic cell; and

f. a means to transfer said hydrogen-oxygen fuel to a combustion site;

wherein said means to remove moisture from said gas comprises said at least two layers of drip plates causing the precipitation of water vapor out of said rising gases.